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Forest Health Protection

Pacific Southwest Region
Northeastern California Shared Service Area

Date: August 27, 2012
File Code: 3420

To: District Ranger, American River Ranger District, Tahoe National Forest

Subject: Evaluation of grasshopper injury to conifer seedlings in the Foresthill Forest Genetics Center (FHP Report NE12-04)

At the request of Bill Cozad, Seed Orchard Manager, American River Ranger District, Tahoe National Forest, Danny Cluck, Forest Health Protection (FHP) Entomologist, conducted a field visit to the Foresthill Forest Genetics Center (FFGC) on August 24, 2012. The objective of the visit was to document the extent of grasshopper feeding on sugar pine and spruce seedlings and observe the efficacy of insecticide treatments in reducing grasshopper populations.

Background

The FFGC is located about seven miles NE of Foresthill, CA at elevations ranging between 4,100 and 4,300 feet (T14N, R11E, Sections 3, 4 and 9). The entire area was burned in the 1960 Volcano Fire and the FGC was subsequently established as a seed orchard and progeny test area. The FFGC has an integrated pest management program that is covered under an environmental assessment (1997).

Bill Cozad contacted me on August 9, 2012 regarding the elevated grasshopper populations and the potential for excessive damage to conifer seedlings and requested a site visit. By the following week (August 14-17) feeding damage had increased to the point where some spruce seedlings were completely defoliated on one plot within the British Columbia Adaptation study block (BCAS). Based on this current information and my previous evaluation of grasshopper damage at the FFGC in 2008 (see FHP Evaluation #NE09-02), I recommended the application of insecticides to affected blocks prior to my site visit. Applications were subsequently initiated beginning on August 22, 2012 with immediate control of grasshopper populations in treated blocks.

Observations

High numbers of grasshoppers (Acrididae, short-horned grasshoppers) were observed throughout the seed orchard including areas adjacent to the BCAS block and the sugar pine seedling blocks. Conversely, both of these blocks had been treated with Asana XL within the previous couple of days and were devoid of grasshoppers. Severe defoliation was observed on one of the spruce plots within the BCAS (Figure 1) with the potential for mortality of a few individuals. Feeding on sugar pine seedlings was also observed in the same area that suffered severe damage in 2008 (Figure 2).

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Figure 1. Spruce seedling with top half of crown defoliated by grasshopper feeding.

Figure 2. Sugar pine seedling with tips of needles consumed by grasshoppers.

Discussion/Conclusion

Grasshopper populations appear to have returned to levels documented in 2008 and 2009 when high levels of damage occurred to sugar pine seedlings. Like 2008 and 2009, grasshopper populations are likely increasing in grassy vegetation and then switching to conifer seedlings as vegetation dries.

Treating with esfenvalerate (Asana XL) has proved to work very well in controlling grasshoppers in areas where seedlings are growing. Since high grasshopper populations do not occur every year, and outbreaks are mostly unpredictable, treating seedling blocks when populations are increasing and before damage occurs may be most the effective and economical control option. Treated blocks should be monitored for reappearance of high numbers of grasshoppers that may require additional applications.

FFGC staff is encouraged to monitor grasshopper populations early in the summer so that insecticides can be applied prior to any feeding damage occurs to conifer seedlings. Forest Health Protection can assist with the development of a grasshopper population monitoring protocol, including establishing population thresholds that initiate the need for treatments.

If you have any questions regarding this report and/or need additional information please contact Danny Cluck at 530-252-6431.

/s/ Danny Cluck

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